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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,095	02/19/2004	Anuj Batra	TI-36097	4758
23494 7590 07/06/2007 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			EXAMINER AHN, SAM K	
			ART UNIT 2611	PAPER NUMBER
			NOTIFICATION DATE 07/06/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

Application No.

10/782,095

Applicant(s)

BATRA ET AL.

Examiner

Sam K. Ahn

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) 39-57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 14-17 and 29-38 is/are rejected.
- 7) ☒ Claim(s) 9-13 and 18-28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                               |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                          | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>021904</u> | 6) <input type="checkbox"/> Other: _____                                                |

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election with traverse of Group I (claims 1-38) in the reply filed on 06/19/07 is acknowledged. The traversal is on the ground(s) that it would not provide a serious burden on the examiner. This is not found persuasive because Inventions Group I and Group II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination Group II of Claims 39-57 has separate utility such as distinguishing multiple piconets using any type of preamble other than the preamble of Group I through a first and second despreaders. See MPEP § 806.05(d).

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 39-57 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Group II (claims 39-57) there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 06/19/07.
3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2-8, 14-17 and 31-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 2, 3, 31 and 38, the phrase "can differ", "may be" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claims 4-8 and 32-37 directly or indirectly depend on claim 3 or 31.

Claims 7, 8 recite the limitation "Tone Number", "Value" in the table. There is insufficient antecedent basis for this limitation in the claim.

Claims 14-17 recite the limitation "Sequence Element", "Value" in the table.

There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Li et al. US 2004/0022174 A1 (Li).

Regarding claim 1, Li teaches a preamble for a wireless communications system, the preamble comprising a sequence wherein the sequence comprises a concatenation of a first set of sub-sequences (see Fig.1A of T1 and T2 of long training symbols), with each sub-sequence containing a specified number of zeroes (each of the long training symbols comprising one zero, see Eq.1), and wherein each sub-sequence can differ depending upon its position in the preamble (T2 is followed by T1 in Fig.1, and note paragraph 0006). The recitation in the preamble is not given patentable weight since the recitation recites the intended use of a structure and the body of claim does not depend on the preamble for completeness and the bodily limitations are able to stand alone.

Regarding claim 2, Li further teaches wherein the sub-sequences may be specified in the time domain (see Fig.1A shown in time domain of x axis).

Regarding claim 3, Li further teaches a second sequence (short training symbols 110 in Fig.1A) wherein the second sequence comprises a concatenation of a second set of sub-sequences (t1 ~t10, note paragraph 0005), wherein the second set of sub-sequences can differ from the first set of sub-sequences (110 and 120 in Fig.1A are evidently different).

Regarding claim 29, Li further teaches OFDM (note paragraph 0002).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. US 2004/0022174 A1 (Li) in view of Kaku et al. US 2003/0007190 A1 (Kaku).

Regarding claim 30, Li teaches all subject matter claimed, as applied to claim 29.

And although Li teaches the OFDM system, does not further teach a time frequency interleaved, OFDM system.

Kaku teaches an OFDM system wherein the transmitter of the system further performs time frequency interleaving (see 104 in Fig.1) and suggests that this results in a two-dimensional interleaving (further see Figs.15A and 15B), hence as illustrated in Fig.15B the interleaving level has increased, resulting in the two-dimensional interleaving (note paragraph 0093). Kaku also suggests that interleaving in the OFDM system is well-known to an artisan (note paragraph 0010). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Kaku in the system of Li by implementing interleaving, the time frequency interleaving, in the transmitter of Li

for the purpose of performing a two-dimensional interleaving (note paragraph 0093).

Regarding claim 31, Li further teaches transforming the signal that includes the preamble received by the receiver wherein the received signal is provided to inverse Fast Fourier Transform (note paragraph 0018). However, Li does not explicitly teach wherein the signal including the preamble is transformed prior to transmission.

Kaku teaches an OFDM system wherein the signal in the transmitter is transformed (from element 4 through element 8 in Fig.12 transforming to time domain, removing or filtering of zero point and interleaving).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Kaku in the system of Li by implementing the two-dimensional interleaving for the purpose of performing a two-dimensional interleaving (note paragraph 0093).

Regarding claim 32, Kaku further teaches time-domain filtering (5 in Fig.12, removing or filtering of zero point in time domain, as it receives output of IFFT).

Regarding claim 33, Kaku further teaches the transformation comprises a first domain conversion (element 4 in Fig.12), processing the domain converted preamble (Li in view of Kaku teaches the signal comprises the preamble,

processing the signal in elements 5-7) and a second domain conversion (element 8).

Regarding claim 34, Kaku further teaches wherein the signal having the preamble, as previously explained, can be transformed prior to use and stored in a memory (wherein the transformation of elements 4-8 in Fig.13 is implemented prior to Data stock 34 in Fig.13 of a buffer memory, note paragraph 0084).

***Allowable Subject Matter***

7. Claims 4-28 and 34-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and/or overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.
8. The following is a statement of reasons for the indication of allowable subject matter: present application discloses a method of transmitting a preamble by transforming the preamble prior to transmission. Prior art teaches all the limitations claimed, however, prior art does not explicitly teach the tone number and values of the tone number as recited in the tables. And further, prior art does not further teach a third and fourth sequence of the first sequence of the preamble having multiple copies with rotations as recited in the claim.




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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sam K. Ahn  
Patent Examiner

6/29/07